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Ptelea.—A revision of this genus as it occurs in western and southwestern United States and Mexico has been published by GREENE.[13] Under his treatment the genus has become rich in species, 59 being recognized, of which 55 are new. Three natural groups are defined, each with its own geographical range: (1) species (37) with chestnut-brown twigs and prevailingly glaucescent or bluish-green foliage; (2) species (13) with amost white twigs and yellow green foliage; (3) species (9) with oinnamon-colored twigs, a peculiar hue and venation of foliage, and narrow-winged or even wingless samaras.—J. M. C.

Anatomy of Commelinaceae.—HOLM has published an elaborate memoir[14] dealing chiefly with the general morphology and anatomy of the Commelinaceae. The 17 species investigated represent the genera Commelina (5), Aneilema, Tinantia, Tradescantia (9), and Weldenia. The memoir is a mine of information which can be drawn upon by the future student of the group who is seeking to organize such details into general statements.—J. M. C.

Genera Siphonogamarum.—The eighth fascicle of DALLA TORRE and HARMS'S[15] list of the genera of seed plants concludes the genera of Compositae, 9629, Thamnoseris being the last one. The genera of uncertain affinity swell the number of genera to 9810. There is also a supplement of 51 pages, and the general index of names is begun.—J. M. C.

NOTES FOR STUDENTS.

Ancient Araucarians.—In Jurassic and Cretaceous deposits there occur abundant remains of leafy branches of coniferous plants that have been described under the generic name Brachyphyllum. The genus has been referred by various authors to Araucarineae, to Cupressineae, and to Taxodineae (near Sequoia); but in a recent paper by JEFFREY and HOLLICK[16] it is shown from an investigation of the internal structure that here can be no doubt as to its Araucarian affinities. In the same paper *Protodammara* is described as a new genus, to include certain Cretaceous cone scales that had been referred to the living genus Agathis (Dammara). Certain lignites associated with both Brachyphyllum and Protodammara were also found to be Araucarian; and the conclusion is reached that these lignites represent the wood of the trees which bore the leafy branches called Brachyphyllum and the cones called Protodammara. This multinomial genus was thought by the authors to be "in all probability the last survivor of an ancient Araucarian line of descent, joined near its base with the primitive stocks of the Abietineous and Cupressineous series."

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[13] GREENE, EDWARD L., The genus Ptelea in the western and southwestern United Stated and Mexico. Contrib. U. S. Nat. Herb. 10:49–79. 1906.

[14] HOLM, THEODORE, Commelinaceae. Morphological and anatomical studies of the vegetative organs of some North and Central American species. Memoirs Nat. Acad Sci. 10:159–192. *pls. 1–8.* 1906.

[15] DALLA TORRE, C. G. DE and HARMS, H., Genera Siphonogamarum ad systema Englerianum conscripta. Fasc. 8. pp. 561–640. Leipzig: Wilhelm Engelmann. 1906. *M6.*

[16] HOLLICK, A., and JEFFREY, E. C., Affinities of certain Cretaceous plant remains commonly referred to the genera Dammara and Brachyphyllum. Amer. Nat. 40: 189–215. *pls. 1–5.* 1906.

More recently JEFFREY has been able to study the wound reactions of Brachyphyllum and to draw from them more definite conclusions as to its relationships.[17] In a well-preserved specimen of the wood, Brachyphyllum can be distinguished at once from any living Araucarian by the absence of resiniferous elements other than those found in the pith-rays. In this feature the genus resembles such old gymnosperm groups as the Pteridospermae, Cordaitales, and Cycadales, and also the very ancient but still flourishing genus Pinus. JEFFREY further finds that Brachyphyllum agrees with the Abietineae in its traumatic reactions, resin-canals being formed as a result of wounding. Following the line of reasoning used in connection with his work on Sequoia,[18] he concludes that these reactions furnish one evidence that the Araucarieae are phylogenetically connected with the Abietineae; and that Agathis and Araucaria hold the same relation to Brachyphyllum that the other genera of the Cupressineae hold to Sequoia. This phylogenetic linking together of both the Cupressineae and Araucariaeae with the very ancient Abietineae is especially interesting on account of the very isolated position of existing Araucarians among existing Coniferales, and also on account of SEWARD's recently expressed views[19] in reference to the relationships and origin of the Araucarians.—J. M. C.

Adsorption of chlorophyll.—It has always been troublesome to explain the differential extraction of the chlorophyll pigments by their solvents under various conditions, and TSWETT seeks to supply a better theory.[20] Thus, fresh leaves or those ground in a mortar with sand or emery and covered with petrolether yield a more or less pure-yellow extract of carotin, with traces of other pigments. Dried leaves, even at a lower temperature, yield even purer carotin. But boiled leaves, or even warmed tissues, yield green extract. Alcohols (methyl, ethyl, and amyl), acetone, acetaldehyde, ether, and chloroform give a green extract with fresh, dry, or boiled leaves, dissolving all pigments freely. It suffices to add a little alcohol (10 per cent. for fresh, 1 per cent. for dry leaves) or the other solvents to petrolether to secure a beautiful green extract. How explain these facts?

If strips of filter paper be put into a flask with an alcohol-petrolether solution and the solvent evaporated *in vacuo*, the pigments become concentrated in the paper. This dry green paper now behaves toward solvents exactly as above stated for the green leaves. This, TSWETT holds, indicates that the pigments[23]

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[17] JEFFREY, E. C., The wound reactions of Brachyphyllum. Annals of Botany **20**:383–394. *pls. 27–28.* 1906.

[18] See BOT. GAZETTE **38**:321. 1904.

[19] See BOT. GAZETTE **42**:224. 1906.

[20] TSWETT, M., Physikalisch-chemische Studien über das Chlorophyll. Die Adsorptionen. Ber. Deutsch. Bot. Gesells. **24**:316–23. 1906.